

PATENT COOPERATION TREATY

REC'D 03 MAR 2005

From the
INTERNATIONAL SEARCHING AUTHORITY

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To:

**SEMICONDUCTOR ENERGY
LABORATORY CO., LTD.**

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Japan**

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

01.3.2005

Applicant's or agent's file reference

00000PCT7501

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2004/016798

International filing date (day/month/year)

05.11.2004

Priority date (day/month/year)

14.11.2003

International Patent Classification (IPC) or both national classification and IPC

Int.Cl. **G09F9/30**

Applicant

SEMICONDUCTOR ENERGY LABORATORY CO., LTD.

1. This opinion contains indications relating to the following items:



Box No. I

Basis of the opinion



Box No. II

Priority



Box No. III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability



Box No. IV

Lack of unity of invention



Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement



Box No. VI

Certain documents cited



Box No. VII

Certain defects in the international application



Box No. VIII

Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Date of completion of this opinion

03.02.2005

Name and mailing address of the ISA/JP

Japan Patent Office

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/JP2004/016798

Box No. I

Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/ 016798

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1 - 25</u>	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	<u>1 - 25</u>	NO
Industrial applicability (IA)	Claims	<u>1 - 25</u>	YES
	Claims		NO

2. Citations and explanations

D1: JP 2003-050405 A (MATSUSHITA ELECTRIC INDUSTRIAL Co., LTD.) 2003.02.21
paragraph [0078]-[0088], figure 14,15
paragraph [0062]-[0068],[0078]-[0079], figure 1,14
& US 2002/056838 A1 & EP 1209748 A1 & CN 1353329 A
D2: JP 2003-058077 A (FUJI PHOTO FILM CO., LTD.) 2003.02.28
whole document
D3: JP 2001-196590 A (SEMICONDUCTOR ENERGY LABORATORY CO., LTD.)
2001.07.19
paragraph [0013],[0029]-[0032]

The subject matter of claim 1 does not involve an inventive step over D1 and D2 for the following reasons.

D1 discloses a TFT array which has:
channel portions 23a, source portions 23b, drain portions 23c, and pixel electrodes 10 connected to the drain portions 23c (paragraph [0085]) formed on an insulating layer 22,
an electroluminescent layer and a counter electrode formed on the pixel electrodes (paragraph [0078]).

D2 discloses that a forming process of gate electrodes on a substrate having photocatalytic surface (e.g. TiO₂ layer) by inc jet method simplifies the manufacturing process of a TFT array.

The technical feature "a gate electrode provided formed over a substrate having an insulating surface having a photocatalytic function therebetween" is not disclosed in D1. However, the person skilled in the art would easily conceive the idea of applying the technical feature employed in D2 to the invention disclosed in D1 to simplify the manufacturing process of a TFT array.

The technical feature "the wiring layer covers the edge portion of the first electrode" is not disclosed in D1. However, it is a matter of mere modification because this feature is just to divide the pixel electrodes 10 disclosed in D1 into two parts, and whether which part of the divided pixel electrodes covers the other part is a matter of design variation.

**WRITTEN OPINION OF THE
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International application No.

PCT/JP2004/016798

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: **V**

The subject matter of claim 2 does not involve an inventive step over D1 and D2. D1 discloses top gate TFT (paragraph [0062]-[0068]) like claim 2.

The subject matters of claim 3-10 do not involve an inventive step over D1 and D2 for the same reasons above.

The subject matter of claim 11 does not involve an inventive step over D1 and D2 because silver, gold, copper, and indium tin oxide are well-known materials as an electrode and a wiring layer. Claim 11 is only to select well-known materials.

The subject matter of claim 12 does not involve an inventive step over D1, D2 and D3. D3 discloses that mixture of hydrogen and halogen in manufacturing semiconductor film having amorphous structure (e.g. microcrystal semiconductor film) improves TFT quality. The person skilled in the art would easily conceive the idea of applying the technical feature employed in D3 to the invention disclosed in D1 to improve TFT quality.

The subject matter of claim 13 does not involve an inventive step over D1, D2 and D3 because the TFT array disclosed in D1 is used for the EL display panel.

The subject matters of claim 14-24 do not involve an inventive step over D1 and D2 because the person skilled in the art would easily conceive the idea of using the inc jet method not only for forming gate electrode but for forming other electrodes and a wiring layer.

The subject matter of claim 25 does not involve an inventive step over D1, D2 and D3 for the reasons above.